CB Series Multi-function Counter / Timer User Manual

72H X 72W X 100L mm

Feature

- ⊙ Optional counting speed 1CPS/30CPS/1KCPS/10KCPS
- ⊙ Prescale value can be set to 0.000000 - 99999999 (8digit)
- ⊙ Power fail memory function
- ⊙ 4, 6, 8 digit LED display for option
- ⊙ 4 kinds of input modes and 8 kinds of output modes for counting
- ⊙ Up to 3 relay output
- ⊙ 9 kinds of timing modes
- ⊙ Batch counting and output function, one counter with two counting function.
- ⊙ For rotary encoder signal input, no need to connect a pull-up resistor.
- ⊙ Modbus RS485 communication (optional function)
- ⊙ Applied to the field of light industry, machinery, packing and food industry to measure length and count signal input, etc.

1. Code Illustration

CB□□□-R D□□□

- Communication fuction: blank: no RS485 fuction 8: with RS485 fuction
- 1: 1 preset 2: 2 preset
- Display: 8: 8 digit 6: 6 digit 4: 4 digit
- Alarm: C: 2 alarm D: 3 alarm
- Output: R: Relay S: SSR
- Blank: Switching power supply F: 24VDC power supply
- Size(mm): 7: 72W*72H*100L
- CB series multi-functional Counter / Timer

24V power supply can be special ordered.

2. Ordering code

No.	Code	Size (mm)	Function			
			Display	Outpt no.	Batch output	Communication
1	CB7-RC41	72×72	4 digit	2	yes	no
2	CB7-RD428	72×72	4 digit	3	yes	yes
3	CB7-RC61	72×72	6 digit	2	yes	no
4	CB7-RD628	72×72	6 digit	3	yes	yes
5	CB7-RC81	72×72	8 digit	2	yes	no
6	CB7-RD828	72×72	8 digit	3	yes	yes

3. Techinical Secification

Power supply	Switching power AC/DC 85～265V （DC24V power to be special ordered.）
Consumption	＜ 5W
Input signal (sine, square)	Voltage :Hight: 3 ～30V Low: 0～2V
Trigger mode	Up edge or down edge
Counter speed	≤10Kcps
Data reserve time	10 years
Ambient temperature	0 ～ 50 ℃
Anti-interference	Power: 2000Vp-p I/0 connector: 100Vp-p
Counter range	-19999999～99999999 (8digit) -199999 ～999999 (6digit) -1999～9999 (4 digit)
Output delay time	0000000.1 ～ 9999999.9S (8digit) 00000.1 ～99999.9S (6digit) 000.1～ 999.9S (4 digit)
Input impedance	5.4 KΩ
Relay capacity	AC 250V 3A (Resistive load)
Counting output mode	F N C R K P Q A（counting up or down）
Timing output mode	ond ond1 ond2 FLk FLk1 FLk2 Int Int1 ofd
Insulated impedance	≥20MΩ (Power supply connector & Outside connector)
Dielectric strength	AC 1.5KV 1min (Power supply connector & Outside connector)
Timing accuracy	0.2%FS
Timing range	0.01S～9999H59M59S(8digit) 0.01S～9999H59M(6digit) 0.01S～ 99H 59M (4 digit)
Dimension (mm)	72H×72W×100L

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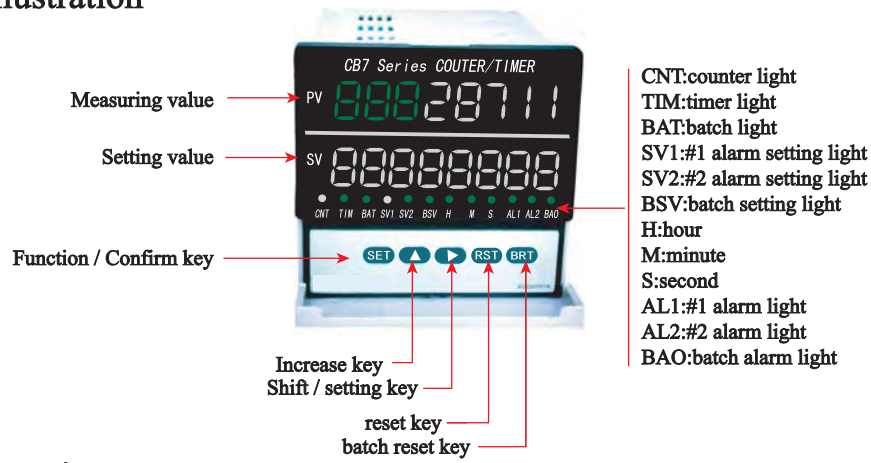
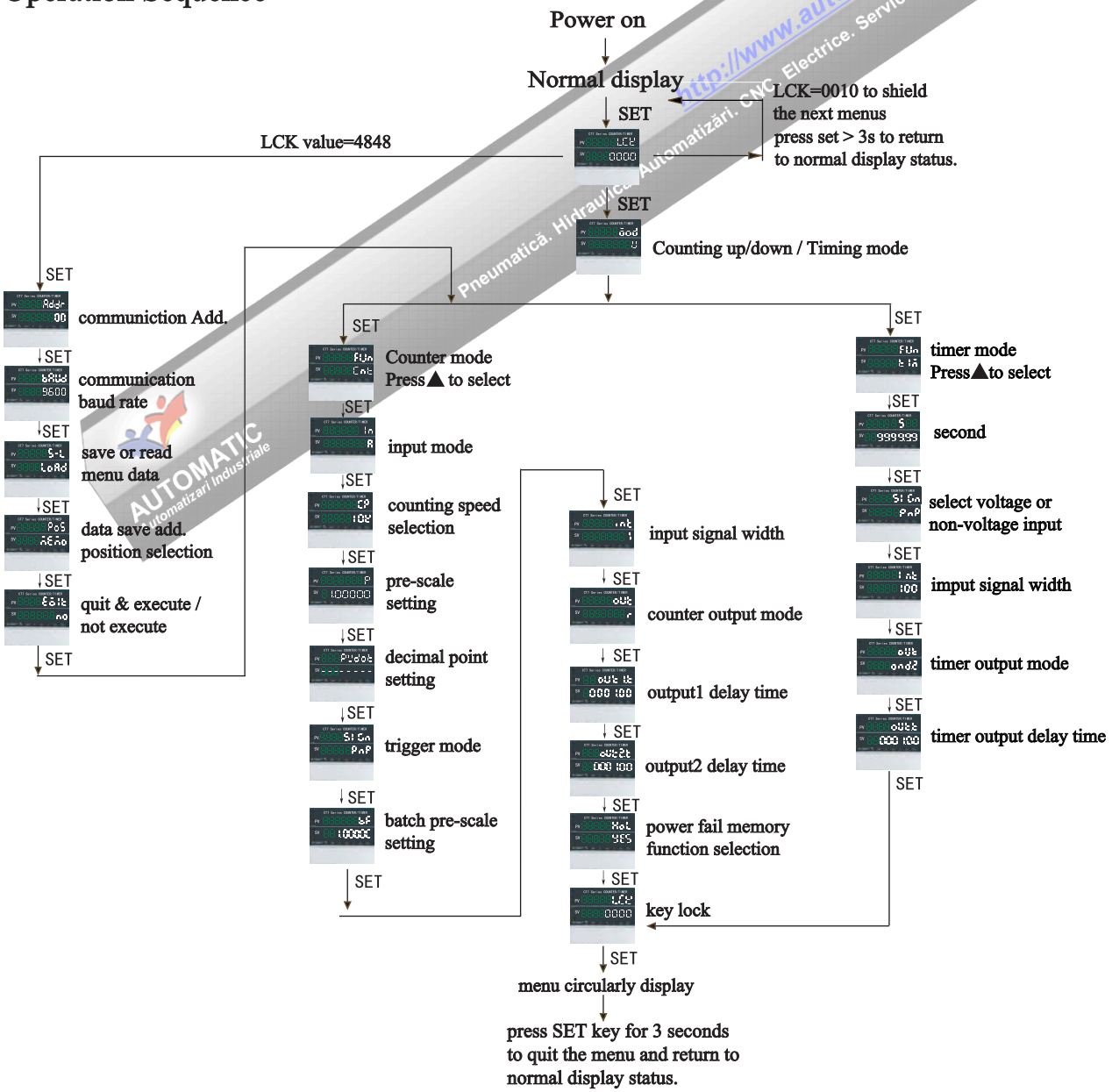
4. Panel Illustration



5. Key Operation

1) The counter should be checked if the connections are all correct before power on.
2) There are 5 keys on the panel
   SET: In normal status, press SET for 3 seconds to show the setting menu.
   △: increase key: In SV setting menu, press it to increase the value; in Setting menu, press it to switch function.
   RST: Reset key. In normal display status, press it to reset the measured value; in setting menu, press it to shift the decimal point rigthward.
   ▷: Shift key. In normal display status, press it to show SV setting menu. In setting menu, press it to shift the flickering digit rightward.
   BRT: Batch reset key. In batch counting status, press it to reset the batch value.
3) In setting menu, press SET key for 3S to quit the menu and return to normal display status. If no button operation for long time in the setting menu, it will automatically quit and return to normal display status, but the data will not be saved.

6. Operation Sequence



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Form1: parameter setting

serial	code	meaning	specification
1	LCK	function selection	If LCK=4848, counter shows advanced fuction setting menu; LCK=4848→ADDR→BAUD→S-L→POS→EXIT→measuring status. Press △▷ to change value.
2	S-L	save/read menu setting data	SAVE→LOAD: SAVE: save the data to the appointed room; LOAD: load data from the appointed room.
3	PoS	select the position to save data	MEMO→MEM1→MEM2→MEM3→
4	Exit	exit menu	YES→NO→ YES: save or load data when exit. NO:not save or load data when exit. press RST : clear all memory and exit
5	FUn	functoin selection	use"▲"select:CNT→TIM select counter or timer
6	Mod	up / down timing or counting mode	use"▲"select: U↔d U: Counting / Timing Up. d: Counting / Timing Down.
7	In	input mode selection	Use ▲to select, total 4 input modes: (Please refer to Picture A: Input Mode Logic Chart) A: CP1 counts when it is high electrical level, CP2 is invalid. B: CP1 counts down when CP2 is high level. CP1 counts up when CP2 is low level. (Up mode) C: CP1 counts up, CP2 counts down, display value=CP1-CP2 (Up mode). D: CP1 counts up when the phase of CP1 leads the one of CP2; CP1 counts down when the phase of CP1 lags the one of CP2. This mode is applicable to rotary encoders input, it is not necessary to connect pull-up resistors, but only for NPN mode.
8	CP	counting speed selection	press ▲to select different counting speed 1→30→100→1K→10K→
9	P	prescale value setting	▶: shift the flickering digit ▲: change the flickering digit value Prescale value setting range : 0.0000001 ～99999999 Prescale function: converting pulse input to the direct display of length, position or flow value
10	P1dot (dot)	display value decimal point setting	use ▲to choose different decimal point position.
11	SIGn	Trigger mode	use ▲ key to select rising edge or falling edge triggering / voltage or non voltage input
12	tIM	timer range selection	"▲": choose different timing range S→M.S.→H.M.→H.M.S.→ S: 0.01s ～9999.99s M.S: 0.01s ～ 9999m59s H.M: 1m ～ 9999h59m; H.M.S: 0.01h ～99h 59m 59s 99
13	Int	input control signal pluse width	use"▲"choose different timing range 1→30→100→1000→ Pulse Width setting range: 1～1000; unit: ms setting input signal width, such as RESET, BATCH RESE and PAUSE signal
14	out	output mode selection	use"▲": choose different output control mode Counting Mode: F N R C K P Q A (see chart B: Counter output mode) Batch Counting / Linespeed Output Mode: F, N, R, C (please refer to chart B) Timing Mode: ond→ond1→ond2→FLK→FLK1→FLK2→int→int1→ofd (see chart C: Timer output mode)
15	out1.t (t1.t) out2.t (t2.t)	The delay time of output #1, #2	▶: shift the flickering digit ▲: change the flickering digit value RST: change the delay time decimal point position Delay time seting range: same as counter Min. Delay Time: 0.01Second. The setting range is same as tIM (Counting range selection)
16	HoL	power fail memory function selection	YES: with power fail memory (After power on, the counting / timing is from the saved value after the last power off.) NO: no power fail memory (After power on, all value will be reset.)
17	LCK	key lock	▶ key: shift the flickering digit ▲ key: change the flickering digit The setting range of password: 0000-9999 System locks or unlocks 4 different function as per the password value set by users: 1) Lock or unlock SV value. Only if LCK=0001, SV value cannot be changed. Otherwise it can be changed; 2) Lock or unlock RST, BRT value. Only if LCK=1000, RST & BRT key is locked, i.e., value cannot be reset even RST or BRT is pressed. Othewise, RST & BRT key has reset function. (But the connectors of RST & BRT is not locked, i.e., users can still reset value by connecting the connectors.) 3) Lock or unlock ex-factory value. Only if LCK=0100, users can reset all setting to ex-factory value by pressing SET +▲key for 3S in normal display status (At this moment it shows INIT for 1S, and then setting value is reset.) 4) Lock or unlock menu. Only if LCK=0010, menu is locked and users cannot change menu value; otherwise users can change menu value.

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Form 2: SV Value setting parameter

No.	Code Name	Parameter meaning	Indication	Setting range
1	SV1	Setting value #1 (SV1 light is on)	up mode, when measuring value raises to setting value SV1, AL1 outputs, AL1 light turns on, reset state is 0. down mode, when measuring value falls to 0, AL1 outputs, AL1 light turns on, reset state is SV1. "△"key: change fickering digital value "▷" key: shift digit SET key: confirm all changed parameter. if setting value is "0", press SET key will display"Error"or"Erro", can't exit. RST key : decimal point shift key. Press it once, the decimal point shifts rightwards by 1 digit.	0.001-9999 (4 digit display) 0.00001-999999 (6 digit display) 0.0000001-99999999 (8 digit display)
2	SV2	Setting value #2 (SV2 light is on)	up mode, when measuring value raise to setting value SV2, AL2 outupts, AL2 light turns on. down mode, measuring falls by setting value SV2, it becomes SV1-SV2, AL2 outputs. AL2 light turns on. SET, RST setting same as above.	SV1≥P SV2≥P P≥0
3	BSV	Batch setting value (BSV light is on)	up mode, when measuring value raises to setting value BSV, BAO output, BAO light turns on. down mode, when measuring value falls to setting value BSV, BAO outputs, BAO light turns on. SET, RST key setting same as above	BSV≥BP BP≥0

Chart A Input logic relation chart

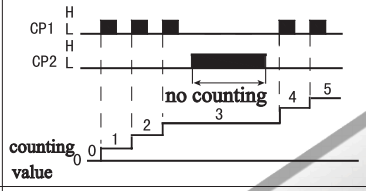
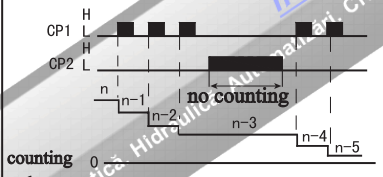
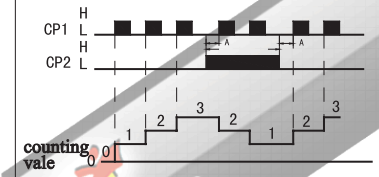
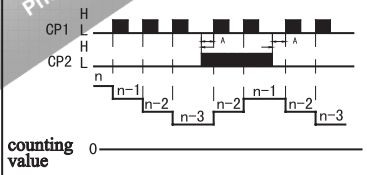
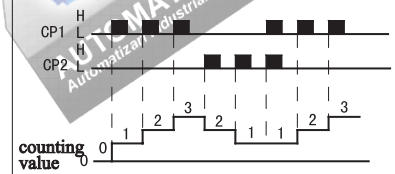
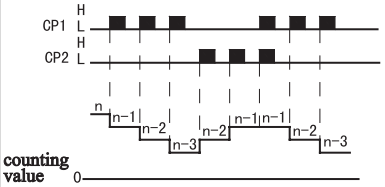
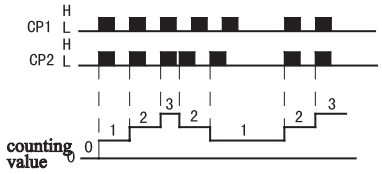
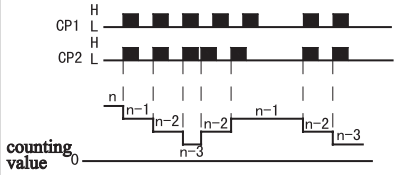
mode	up	down	indication
A			CP2: not counting input CP1: counting input
B			Up mode: CP2 Low ,CP1 counts up CP2 high ,CP1 counts down Down mode: CP2 low,CP1 counts down CP2 high,CP1 counts up
C			Up mode: CP1 counts up, CP2 counts down display value=CP1-CP2 Down mode: CP1 counts down CP2 counts up display value=CP2-CP1
D			Up mode: CP1 leads CP2, counter counts up CP2 leads CP1, counter counts down Down mode: CP1 leads CP2, counter counts down CP2 leads CP1, counter counts up

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Chart B: Counter Output Mode

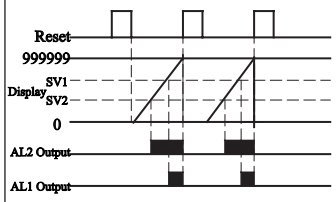
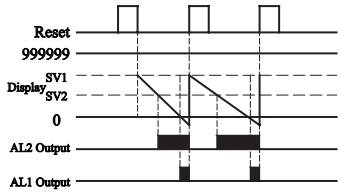
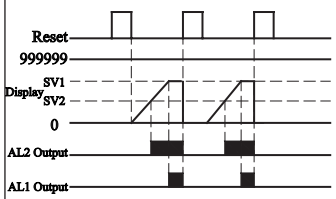
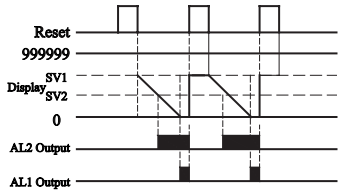
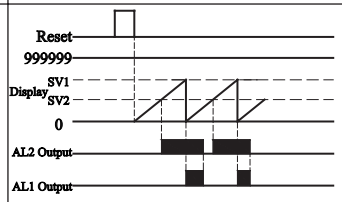
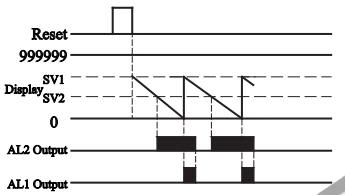
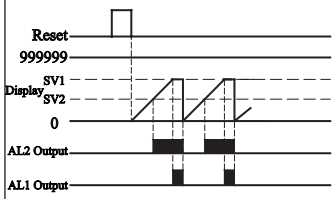
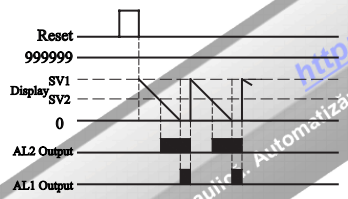
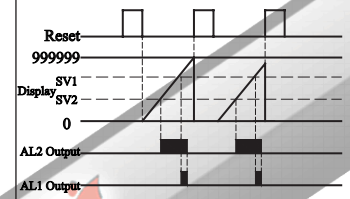
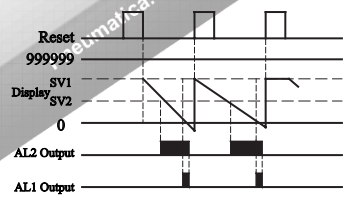
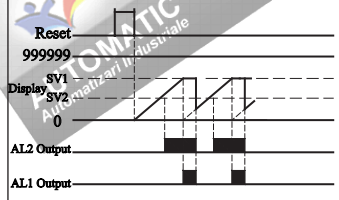
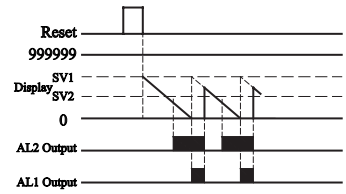
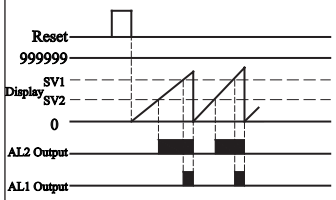
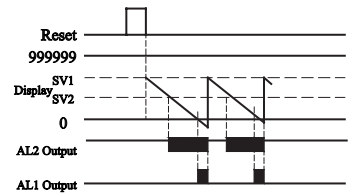
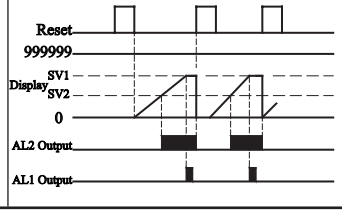
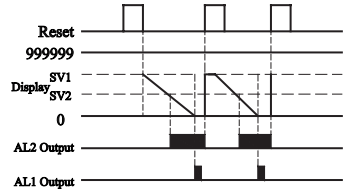
Output Mode	Input Mode: Counting up / Timing up	Input Mode: Counting down / Timing down	Action after the counting value reaches preset value
F			Display value continues to increase or decrease, output remains until reset signal input.
N			Display value and output remains until reset signal input.
C			Display value is reset automatically, output remains for the preset delay time and then is reset. (Output action is repeat single output)
R			Display value and output remains unitl preset delay time. (Output action is repeat single output)
K			Display value continues to increase or decrease until reset signal input. Output remains preset delay time and then is reset. (Output action is repeat single output)
P			Display value remains the delay time of single output, and then displays the next cycle value. (During the delay time the display value starts the counting of next cycle, timing output action is repeat single output)
Q			Display value continues to increase or decrease in the delay time of single output, and is reset when delay time is up. Output remains for delay time and then is reset. (Output action is repeat single output)
A			Min.preset value & AL2 output remains till manual reset signal input, AL1 output remains for preset time and then is reset. (Output action is repeat single output)

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Chart C: Timer Output Mode

Output mode	Time chart	Action
ond (OND)	SIGNAL ON DELAY（Power off to reset） Power supply CP1 PAUSE Reset AL2(output) up Display Down UP(setting time) 0 Down(setting time) 0	1) Timing starts when CP1 signal turns ON, and resets if CP1 signal turns OFF. 2)When reset signal is OFF, CP1 signal is ON, timing starts when power turns ON. 3)Control output operated as hold or one-shot time. Power CP1 AL2 (output) T:(preset time)
ond.1 (OND.1)	SIGNAL ON DELAY 1（Power off to reset） Power supply CP1 PAUSE Reset AL2(output) up Display Down UP(setting time) 0 Down(setting time) 0	1) Timing starts when CP1 signal turns ON, and continues when CP1 signal turns OFF. 2) When reset signal is OFF，CP1 signal is ON, timing starts when power turns ON. 3) Control output operated as hold or one-shot time. Power CP1 AL2 (output) T:(preset time)
ond.2 (OND.2)	POWER ON DELAY（Power Off, counting value is kept） Power supply CP1 PAUSE Reset AL2(output) up Display Down UP(setting time) 0 Down(setting time) 0	1) Timing starts when power turns ON, and continues when power turns OFF. 2) When reset signal is OFF，PAUSE signal is OFF，timing starts when power turns ON. 3) Control output operated as hold or one-shot time. Power AL2 (output) T:(preset tiem)
FLK (FLK)	FLCKER（Power off to reset） Power supply CP1 PAUSE Reset AL2(output) Toff setting time up Display Down Toff setting tiem 0 Toff setting time Toff setting time 0	1) Timing starts when CP1 signal turns ON, If CP1 signal is applied repeatedly, only initial signal is recognized. 2) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 3) Control output operated as hold output, when timing to Toff or Ton setting time, output is ON or OFF. (no One-shot output) 4) Each single Ton time and Toff time must be set separately. 5) For contact output, the setting time must be bigger than 100ms. Power CP1 Toff Ton Toff AL2 (output)
FLK.1 (FLK.1)	FLCKER1（Power off to reset）：Hold output Power supply CP1 PAUSE Reset AL2(output) up Display Down UP(setting time) 0 Down(setting time) 0	1) Timing starts when CP1 signal turns ON，if CP1 signal is recognized, only is the initial one effective. 2) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 3) Control output operated as hold output. For contact output, the setting time must be bigger than 100ms. Power CP1 T T T AL2 (output) T: Setting time
	FLCKER1（Power off to reset）：One-shot output Power supply CP1 PAUSE Reset AL2(output) up Display Down UP(setting time) 0 Down(setting time) 0	1) Timing starts when CP1 signal turns ON，if CP1 signal is recognized, only is the initial one effective. 2) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 3) Control output operated as One-shot output. For contact output, the setting time must be bigger than 100ms. Power CP1 T T T AL2 (output) T: Setting time

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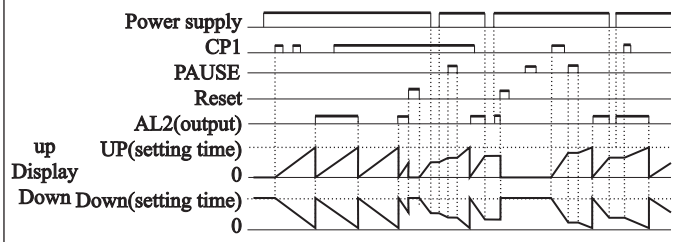
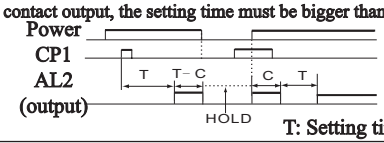
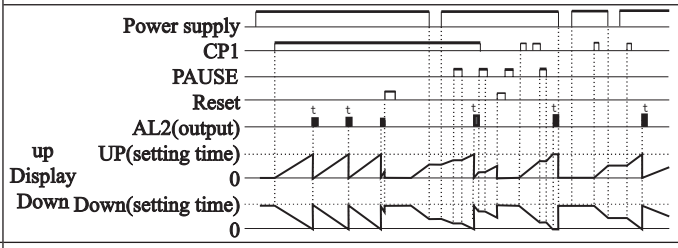
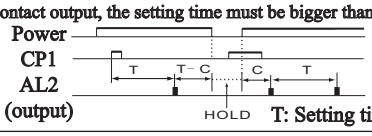
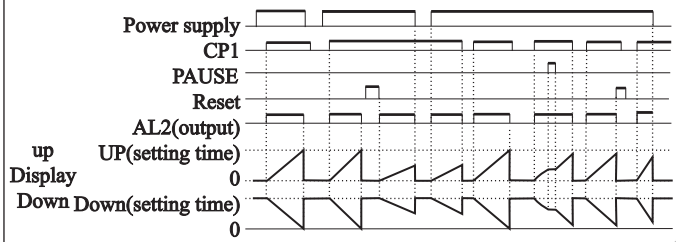
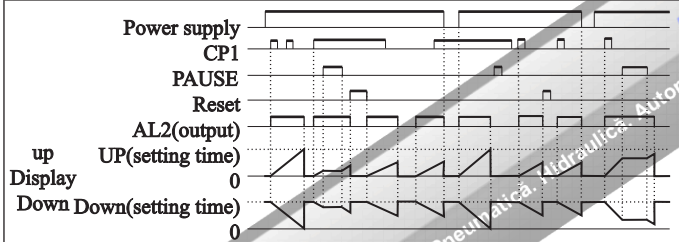
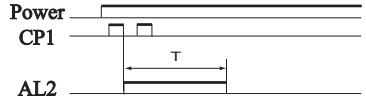
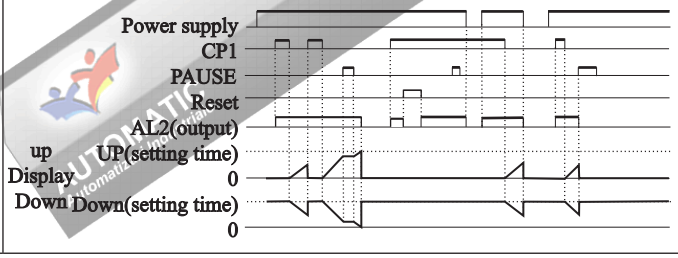
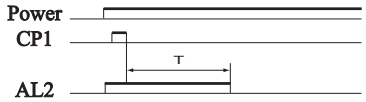
FLK (FLK)	FLCKER2 (Power OFF Hold): Hold output 	1) Timing starts when CP1 signal turns ON，if CP1 signal is recognized, only is the initial one effective. 2) Control output operated as Hold output, maintained to the next setting value. 3) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 4) For contact output, the setting time must be bigger than 100ms.  T: Setting time
	FLCKER2 (Power OFF Hold): One-shot output 	1) Timing starts when CP1 signal turns ON，if CP1 signal is recognized, only is the initial one effective. 2) Control output operated as One-shot output, it outputs when the setting value is reached. 3) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 4) For contact output, the setting time must be bigger than 100ms.  T: Setting time
INT (INT)	INTERVAL (Power / signal reset) 	1) Timing starts when CP1 signal turns ON. 2) Timing resets when CP1 signal turns OFF. 3) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 4) When timing value is reached, display value and control output will be reset automatically. 5) During the timing process, control output is ON. T: Setting time
INT.1 (INT.1)	INTERVSL1 (Power OFF reset) 	1) Timing starts and control output is ON when CP1 signal turns ON. 2) If CP1 signal is applied repeatedly, only is the initial one recognized. 3) When timing value is reached, display value and control output will be reset automatically. 4) When power turns ON and reset signal turns OFF, timing starts when CP1 signal turns ON. 5) When CP1 signal maintains ON status, the timing process is normal.  T: Setting time
OFD (OFD)	INTERVSL1 (Power OFF reset) 	1) When power turns ON and reset signal turns OFF, control output keeps ON status when CP1 signal is ON. 2) When timing value is reached, display value and control output will be reset automatically.  T: Setting time

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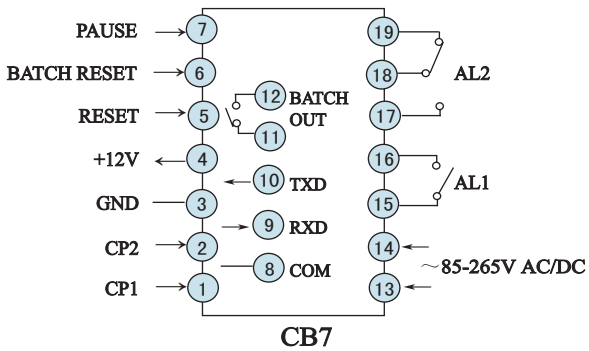
7. Connection Drawing



CB7

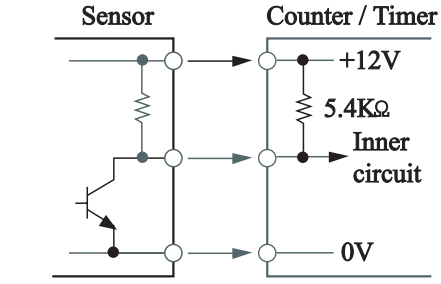
Please refer to the connection drawing on the product if any changes.

8. Input connection

1) Input logic: No-voltage input (NPN)

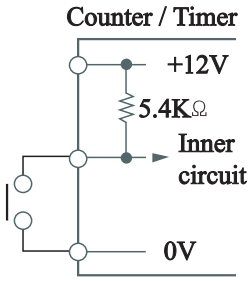
(1) Solid state input

Standard sensor: NPN output type sensor



(NPN voltage input) CB counter

(2) Contact input



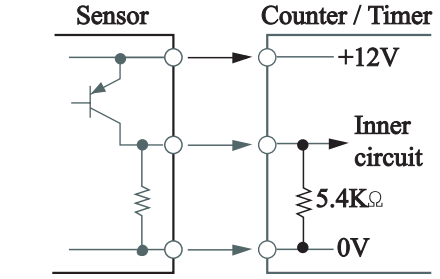
CB counter

Counting speed: 1 or 30cps (counter)

2) Input logic: Voltage input (PNP)

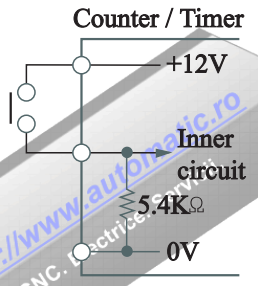
(1) Solid state input

Standard sensor: PNP output type sensor



(PNP voltage input) CB counter

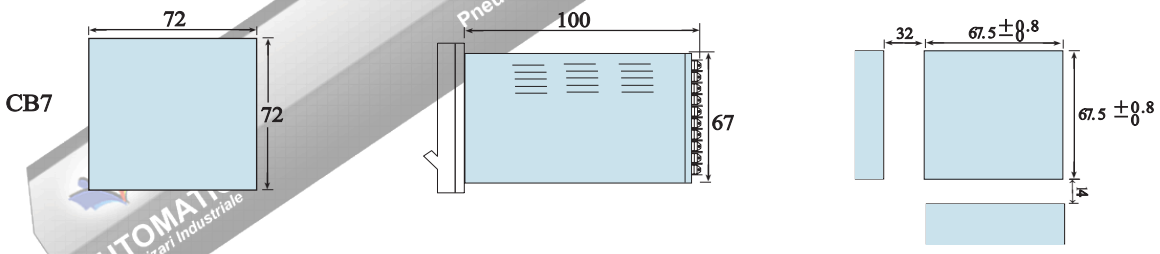
(2) Contact input



CB counter

Counting speed: 1 or 30cps (counter)

9. Outlook and installation dimension



10. Notice

1) In normal measuring status, the timing value, counting value and output will be reset if outer RST connectors are short connected or RST key is pressed manually.
2) When the counter input mode is set to D mode, it is for rotary encoder signal input, there is no need to connect a pull-up resistor (only for NPN).
3) After changing modes, please press RST key to make value reset, after that the counter / timer can work accurately.
4) If the counter / timer displays Error or Erro message, please check if the parameter SV1, SV2 and P is according to the logic relationship (please refer to chart 2).
5) Input signal: The distance between a sensor and the counter should be as short as possible. If the signal wire has to be extended, please use shielding wire. The signal wire should be apart from power supply wire.
6) Counter input connection: when in high speed mode (1K, 5K, 10K), if the input mode is contact input (such as relay connectors), the counting value may be more than the actual one. So for this input mode, please set the input speed as a small value (1 or 30cps).
7) The product should not be used in below environment: heavy shaking and shocking place, heavy acid and alkali place, direct sun shine place, strong magnetic field and electronic interference environment.
8) Installation environment: Only indoor, below altitude 2000M, pollution level is 2.

The product may get malfunction if the operation is not followed to the above instruction.

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CM SERIES COUNTER/TIMER/LENGTH SERIES

72H×72W×100L

48H×48W×100L

48H×96W×100L

FEATURES

⊙Single LED ,4、5,6 digits for option
⊙Size: 48W×48H
72W×72H 96W×48H
⊙Thumb switch and key set
⊙ CP1、CP,4 operating mode:A、B、C、D
⊙Transistor or relay output;
Out put mode :F、N、R、C、K1、K2
P、Q、A、D、H、L
⊙Power fail memory
⊙key or thumb switch can be locked
⊙key or outer ports reset
⊙key or outer ports pause
⊙8 operating mode,decimat,sexagesimal
⊙Delay time,H,M,S.
⊙Enchaned anti-interference

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CODE ILLUSTRATION

CM□ – □ □ □ □ □

- A:excellent thumb witch B:common thumb switch
- 1:1 segment preset 2:2 segment preset
- 4:4 digits 5:5 digits 6:6digits
- S:rate
- P:preste
- Size(mm):4:48H×48W×100L 7:72H×72W×100L 8:48H×96W×100L
- CM seies

* 24V DC power supply be ordered

ORDERING CODE

code	size mm	LED	segment	relay alarm	power	auxiliary	output mode
CM4-PS41A/B	48H×48W×100L	4	one	AL2	AC 90～250V	+12V	F、N、R、C、K1、K2、P、Q、A、D、H、L
CM7-PS41A/B	72H×72W×100L	4	one	AL2	AC 110/220V	+12V	
CM7-PS42A/B	72H×72W×100L	4	two	AL1、AL2	AC 110/220V	+12V	
CM7-PS61A/B	72H×72W×100L	6	two	AL2	AC 110/220V	+12V	
CM7-PS62A/B	72H×72W×100L	6	two	AL1、AL2	AC 110/220V	+12V	
CM8-PS51A/B	48H×96W×100L	5	one	AL2	AC 110/220V	+12V	
CM8-PS52A/B	48H×96W×100L	5	two	AL1、AL2	AC 110/220V	+12V	

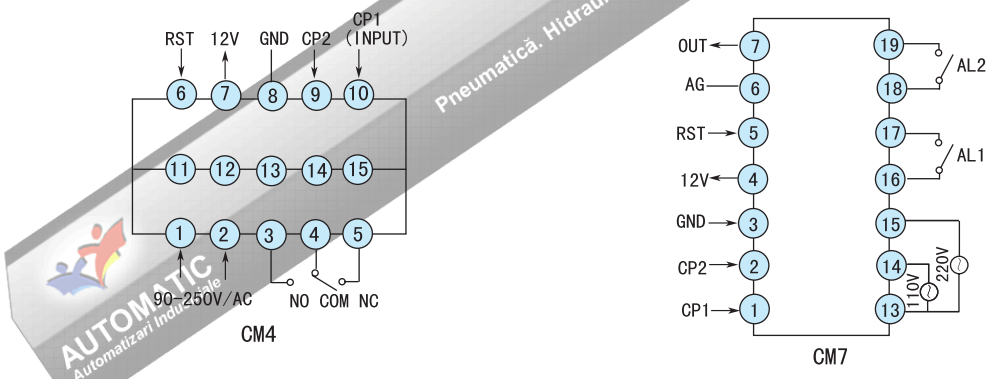
TECHNICAL SPECIFICATION

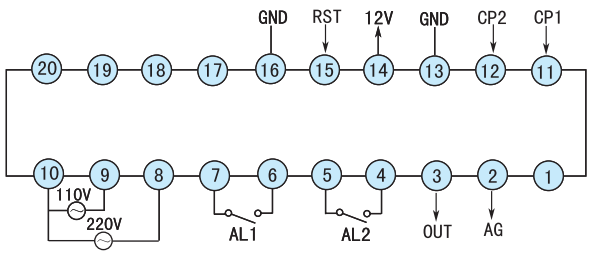
POWER	CM7、CM8:220VAC±15% or110VAC±15% CM4:90～250VAC
Comsuption	＜5W
Input singal	altitude:Hight:5～30V
trigger	rising edge
input frequency MAX	5/30/100/200/1000/3000cps
Data resrve	10 years
Amibent temperature	10℃～ 50℃
Anti-interference	IEC801 3 standard
range	-199999～999999(6 digit) ;-19999～99999(5 digit);-1999～9999(4 digit)
Delay time	0.01～9999.99S(6 digit)、000.01～999.99S(5 digit) 、00.01～99.99S(4 digit)
Input impedance	≥10KΩ

Capacity of relay	AC 250V 3A(resistive)
capacity of transisitor	CM7、CM8:12VDC±10% 50mA max CM4: DC 12VDC±10% 30mA max
Insulation impedace	≥100MΩ
Dielectric strength	AC 1.5KV 1min(power ports to outer ports)
Accuracy	0.1%FS
Ragne	0.01S～99H59M(4 digits) 0.01S～999H59M(5 digits) 0.01S～9999H59M(6 difits)
Size	48H×48W×100L 48H×96W×100L 72H×72W×100L

PANEL ILLUSTRATION

CONNECTION DIAGRAMS





CM8

NOTE: subjcct to change without notice

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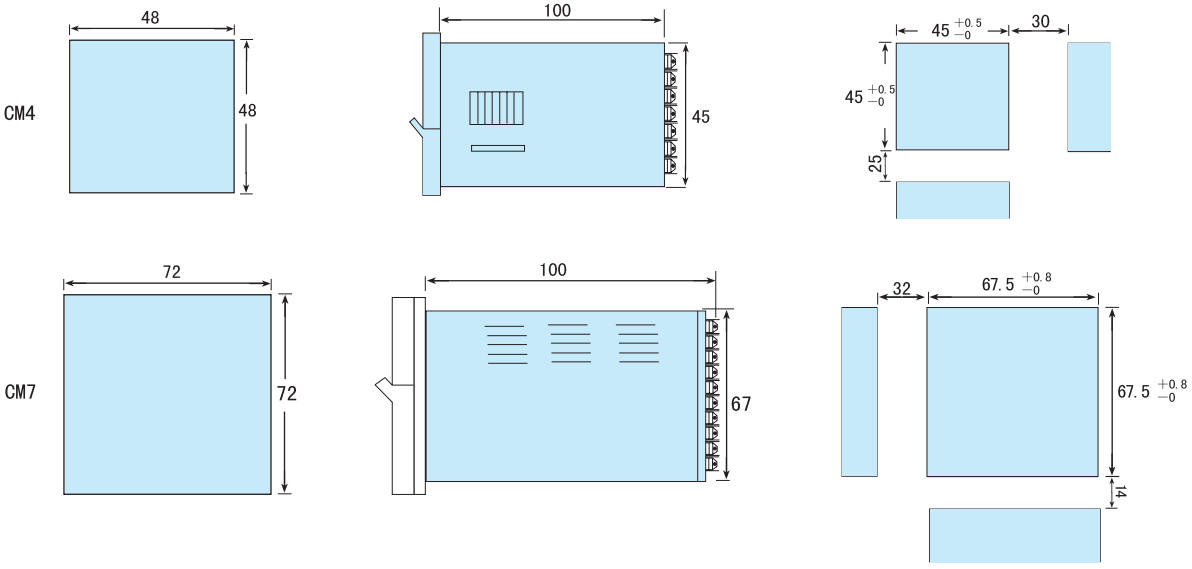
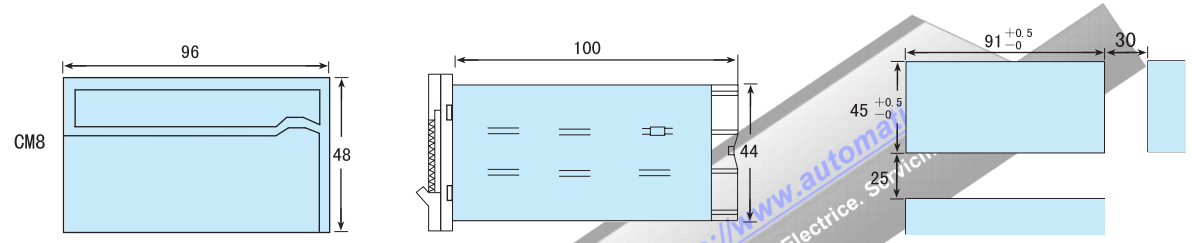
DIMENSION





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CL Series Linespeed/Length Meter
Instruction Manual

72H×72W×100L

Features

⊙Two inputs，one measures length,the other is for linespeed.
⊙Linespeed and length rate setting seperately.
⊙One output controls length,the other is for linespeed.
⊙Counting speed:1CPS/30CPS/1KCPS/10KCPS.
⊙Counting rate:0.00000～999999
⊙Power fail memory function.
⊙4 kinds of input modes, 8 kinds of output modes.
⊙3 alarm output.
⊙Rotary sensor doesn't need resistance.
⊙With 485 communication interface。
⊙Widely applied to slide fastener machine, foodstuff machine and packing machine etc.

1. Code illustration

CL7 □-R D□□□

- Communication:Default:No RS485 8:With RS485
- 1:1 segment preset 2:2 segment preset
- 4:4 digit display(4 digit for length,4 digit for linespeed)
  6:6 digit display(6 digit for length,6 digit for linespeed)
- Alarm output: C:2 alarm D:3 alarm
- Control output: R:Relay output S:SSR output
- Blank:Switch power P：Linearity power F：24VDC power supply
- Dimension: 7:72W×72H×100L
- CL Series linespeed/length meter

* 24V power supply need to be ordered

2.Ordering code

No.	Code	Dimension（mm）	Function				
			digit	Batch output	Relay output	Linespeed output	Communication
1	CL7-RC42	72W×72H	4	1 relay	2	No	No
2	CL7-RD428	72W×72H	4	1 relay	3	Yes	Yes
3	CL7-RC62	72W×72H	6	1 relay	2	No	No
4	CL7-RD628	72W×72H	6	1 relay	3	Yes	Yes

3. Technical Specification

voltage	Linearity power AC 220V±10%, 110V±10%, 50/60Hz Switch power AC/DC 85～265V 50/60Hz （DC24V need to be ordered）
Power consumption	＜5W
Trigger model	up or down
Data saving	10 years
Input signal(Sine wave、Square wave）	Electrical level：Hight:3～30V Low:0～2V
Counting speed	≤10Kcps
Ambient temperature	0℃～50℃
Interference resistance	Power:2000V p-p I/0:100Vp-p
Counting range	-199999～999999(6 digit)、 -1999～9999（4 digit）
Linespeed range	0.00001～999999(6 digit)、 0.001～9999(4 digit)
Output delay time	0000.01～9999H.99M(6 digit)、 00.01～99H99M(4 digit)
Counting output mode	F、N、C、R、K、P、Q、A for option（up/down counting）
input resistance	5.4kΩ
Relay Capacity	AC 250V 3A (resistive load)
Insulation resistance	≥20MΩ
Dielectric strength	AC 1.5KV 1min
Dimension（mm）	48H×48W×100L 72H×72W×100L

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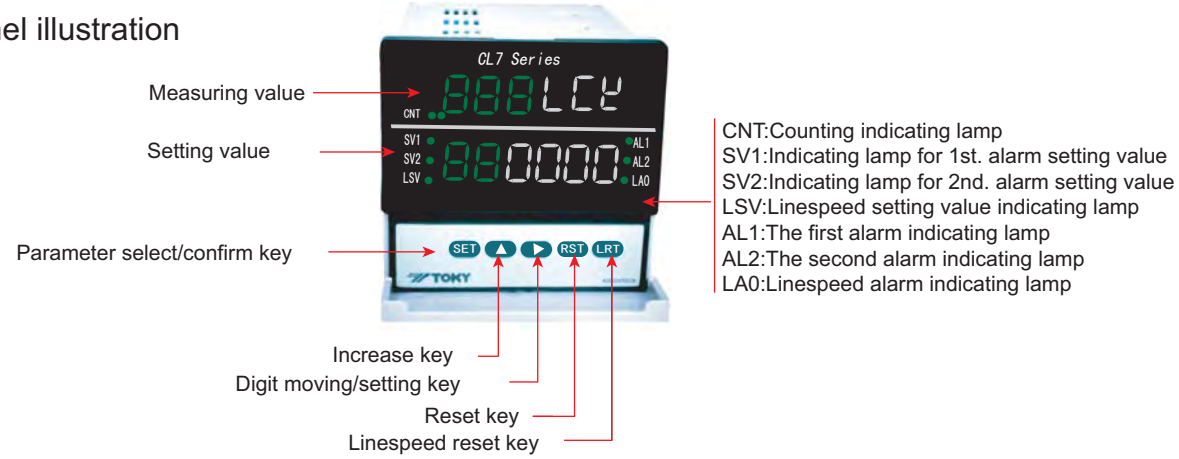
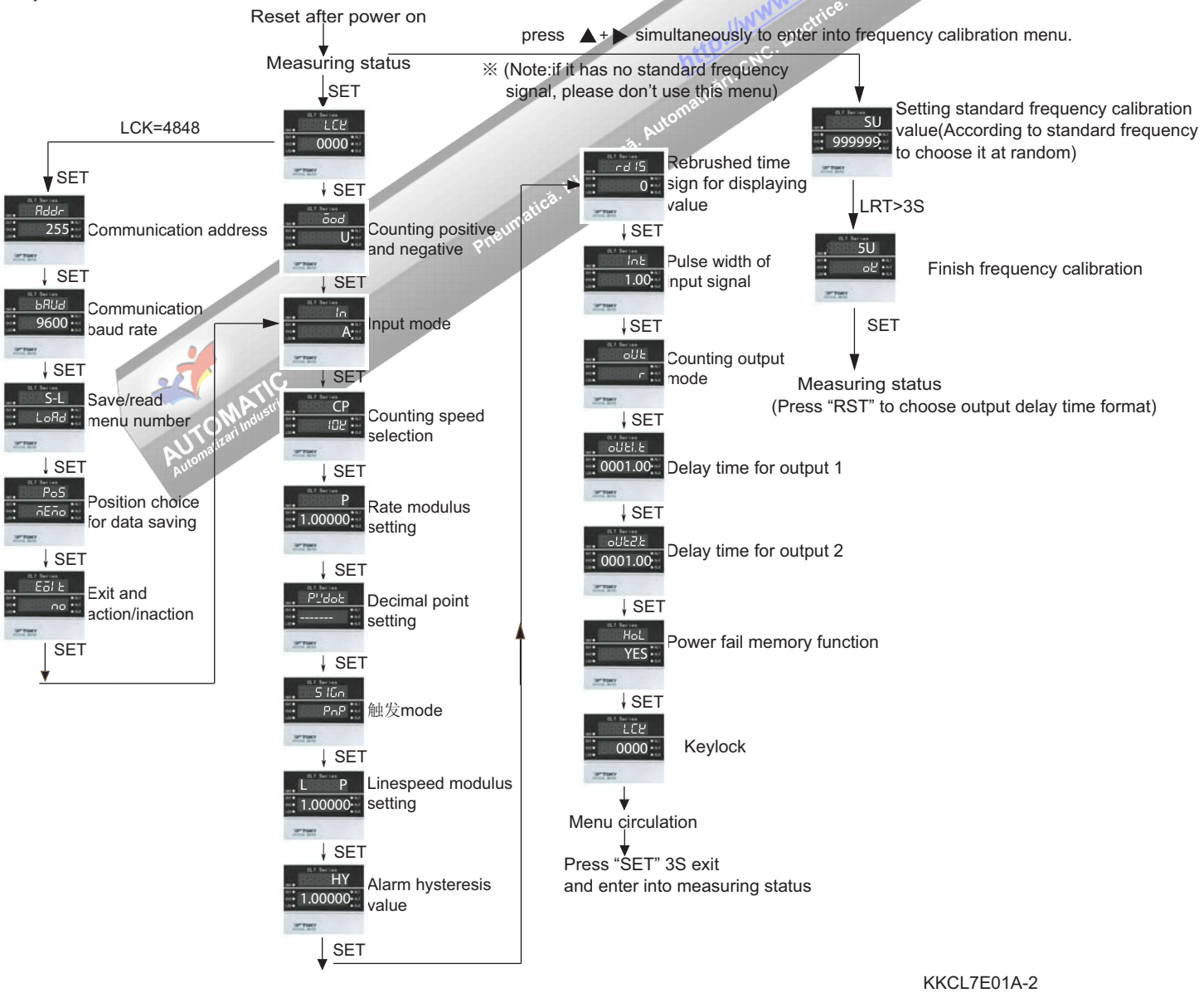
4. Panel illustration



5. Keyboard operating illustration

1. Before using the meter，check the connecting drawing is right or not，power supply meets the meter's requirement，confirm it correctly and then power it on.
2. The meter has five operating keys.
   SET：Setting key: In measuring status, press "SET"3S, enter into setting status.
   △：Increase key: In setting status，press it once, setting digit add 1；In menu operation，press it to transform function.
   RST：Reset key：In measuring status，press it to reset the measuring value；In modifying setting value status, press it to move decimal point to right.
   ▷：Digit moving：In measuring status，press it to enter into modifying setting value status; In setting status, press it to move the flicker to right.
   LRT：Linespeed reset key：In linespeed measuring status ，press it to reset linespeed measuring value.
3. In setting status，press "SET" 3S to exit setting status and enter into measuring status；Besides,in setting status, if you don't operate it for long, it will exit setting status automatically and enter into measuring status,but the setting value that is modified before exiting won't be saved.

6. Operations


Reset after power on
Measuring status
press ▲+▶ simultaneously to enter into frequency calibration menu.
※ (Note:if it has no standard frequency signal, please don't use this menu)
SET
LCK=4848
Addr 255 Communication address
bAUd 9600 Communication baud rate
S-L LoAd Save/read menu number
PoS nEno Position choice for data saving
Edit no Exit and action/inaction
LCK 0000
Good U Counting positive and negative
in A Input mode
CP 10Y Counting speed selection
P 1.00000 Rate modulus setting
PUdot ------ Decimal point setting
SIGn PnP 触发mode
L P 1.00000 Linespeed modulus setting
HY 1.00000 Alarm hysteresis value
rdIS 0 Rebrushed time sign for displaying value
Int 1.00 Pulse width of nput signal
oUt r Counting output mode
oUt.t 0001.00 Delay time for output 1
oUt2t 0001.00 Delay time for output 2
HoL YES Power fail memory function
LCK 0000 Keylock
Menu circulation
Press "SET" 3S exit and enter into measuring status
SU 999999 Setting standard frequency calibration value(According to standard frequency to choose it at random)
LRT>3S
5U oF Finish frequency calibration
Measuring status
(Press "RST" to choose output delay time format)

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1：Parameter setting illustration

No.	Code	Meaning	illustration
1	LCY	function setting	If LCK=4848, enter into high-grade function to set menu; LCK=4848→ADDR→BAUD →S-L→POS→EXIT→Measuring status, press"△" "▷"to modify content.
2	S-L	saving/read menu setting data	SAVE→LOAD: SAVE:Save well-setting data to special space; LOAD:Input data from special space.
3	PoS	choice for saving data position	┌MEMO→MEM1→MEM2→MEM3┐
4	EdIt	exit menu	┌YES→NO┐ YES：Save/input data when exit；NO：Don't save/input data when exit. Press RST key：Clean up all memorries and exit.
5	Mod	up/down counting mode	″▲″：U↦d U：positive counting； d：negative counting.
6	In	choice for input mode	Use ▲ to select, total 4 input modes: (Please refer to Pictur A: CP1 counts when it is high electrical level, CP2 is invalid. B: CP1 counts down when CP2 is high level. CP1 counts up when C C: CP1 counts up, CP2 counts down, display value=CP1-CP2 (Up mo D: CP1 counts up when the phase of CP1 leads the one of CP2; CP phase of CP1 lags the one of CP2. This mode is applicable necessary to connect pull-up resistors, but only for NPN m
7	CP	choice for counting speed	"▲"choose different counting speed ┌1→30→1K→10K┐
8	P	prescale value setting	shift the flickering digit ▲: change the flickering digit value Prescale value setting range 0.0000001～99999999 Prescale function: converting pulse input to the direct display of length, position or flow value
9	P_dot (dot)	decimal point setting	use "▲"to choose different decimal point position.
10	SIGn	Trigger mode	use▲ key to select rising edge or falling edge triggering / voltage or non voltage input
11	LP	linespeed modulus setting	▶： flicker position moving ▲： change flicker digit value rate setting range：0.00001～999999
12	HY	alarm hysteresis value	Setting hysteresis value："▲"： change flicker digit value "▶": flicker position moving "RST "：change decimal point position of hysteresis value
13	rdiS	display rebrushed time	Setting displayed value rebrushed time of meter、press ▲ key to choose 0：rebrush automatically； 5：rebrush 1time/5S； 0.5：rebrush 1time/0.5S； 10：rebrush 1time/10S； 1：rebrush 1time/1S； 20：rebrush 1time/20S； 2：rebrush 1time/2S；
14	Int	input control signal pulse width	″▲″ choose different counting time range ┌1→10→100→1000┐ Pulse width setting range: 1-1000, unit: ms Input signal width setting: RESET / BATCH RESET / PAUSE signal
15	oUt	choice of output mode	Counting mode press"▲" to choose different output control mode. F、N、R、C、K、P、Q、A,(attached B:output motion mode of counter) batch counting/linespeed output mode:F、N、R、C(as above)
16	oUt1.t (□□.□□) oUt2.t (□□.□□)	delay time of output1、2	▶ flicker position moving ▲： change value of flicker digit. RST： change decimal point position of delay time. Minimum delay time: 0.01S. Output delay time:0000.01～9999H.99M(6 digit)、 00.01～99H99M(4 digit)
17	HoL	power fail saving counting value	YES： memory keep function（memorize measuring data，if power is off and repower on,it can continue to count time/number from primary basic ） NO： no memory keep function,after repower on,measuring data will clear up to zero.
18	LCY	key lock	▶： flicker position moving ▲： flicker digit value changing Password range：0000～9999 According to user's four password value,the system can lock or open four different functions seperately： 1:Lock/open SV，only when LCK=0001，SV can't be changed，otherwise SV can be changed; 2:Lock/open RST、BRT，only when LCK=1000，RST、LRT key will be locked，so press RST or LRT won't reset data, otherwise, reset RST、LRT (out-control side of RST and LRT are unlocked 3:Lock/open factory setting function,only whenLCK=0100,in measuring status, press SET+▲ 3S, it flickeringly displays "INIT" 1S and return factory setting. 4:Lock/open menu；only when LCK=0010,lock the menu,users can't modify menu; if LCK isn't 1, set each menu value.

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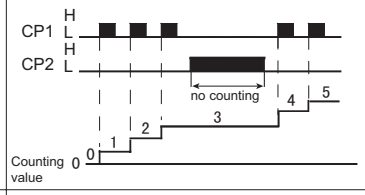
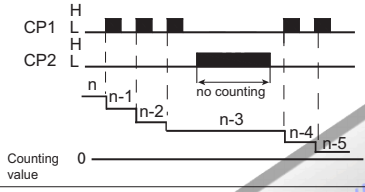
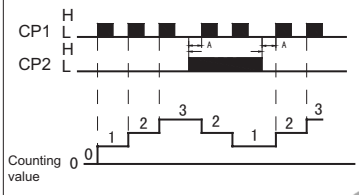
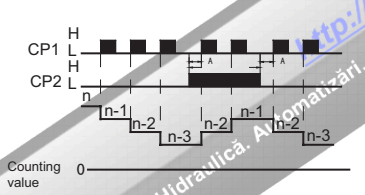
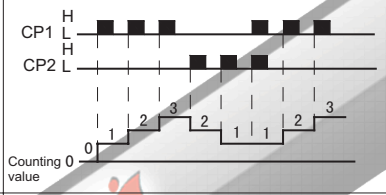
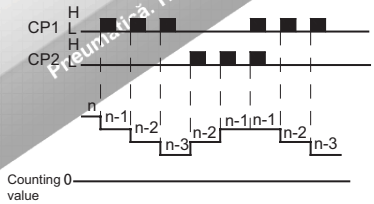
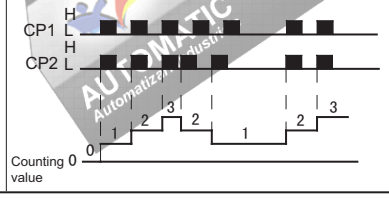
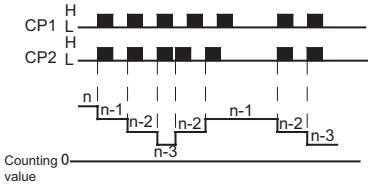
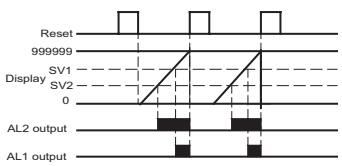
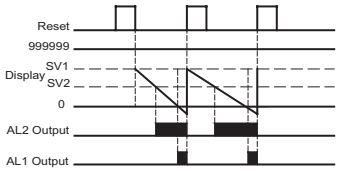
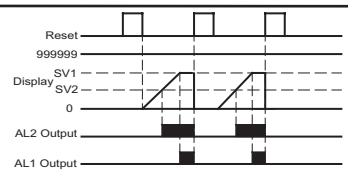
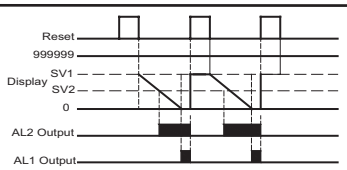
2：SV value setting parameters

No.	Code	Meaning	Illustration	Setting range
1	SV1	Setting value 1 (SV1 light on, it displays.)	Up mode，when measuring value up to setting value SV1，AL1 has output，AL1 light on,reset status=0. down mode, when measuring value down to 0, AL1 has output, AL1 light on,reset status=SV1.“△” key：flicker digit value modifying. “ ▷”key：digit moving key. SET key：correct modified value.If you set value“0”by careless, Press “SET”key can momently display “Error” or “Erro”, and it can’t exit from current status. RST key：decimal point moving key，press it once to move the decimal point to right.	0.001-9999 （4 digit） 0.00001-999999 （6 digit）
2	SV2	Setting value 2 (SV2 light on, it displays.)	Up mode，when measuring value up to setting value SV2，AL2 has output，AL2 light on. Down mode，when measuring value down to setting value SV2(SV1-SV2)，AL2 has output, AL2 light on. SET key，RST key as above.	SV1≥P SV2≥P P≥0
3	LSV	Linespeed setting value(LSV light on, it displays.)	Up mode，when measuring value is up to setting value，LAO has output，LAO light on. Down mode，when measuring value is down to setting value，LAO has output，LAO light on. SET key，RST key：As above.	LSV≥LP LP≥0

Attached A: Input mode logic relation chart.

Mode	UP	Down	Illustration
A			CP2:no counting input CP1:counting input
B			UP mode: CP2 no signal input,CP1 increased counting CP2 has signal input,CP1 decreased counting Down mode: CP2 no signal input,CP1 increased counting CP2 has signal input,CP1 decreased counting
C			Up mode： CP1 increased counting,CP2 decreased counting display value=CP1-CP2 Down mode： CP1 decreased,CP2 increased counting display value=CP2-CP1
D			Up mode： CP2 log CP1,CP2 increased counting CP2 lead CP1,CP2 decrease counting Down mode： CP2 log CP1,CP2 decreased counting CP2 lead CP1,CP2 increased counting

Attached B:Counter output action mode

		Input mode		Action after counting to setting value
		Up counting	Down counting	
Output mode	F			Displaying value keep increased/decreased, output will continue to reset input
	N			Output and displaying value continue to reset input all the time.

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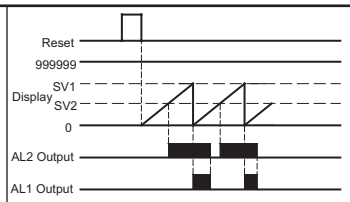
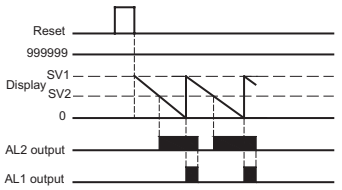
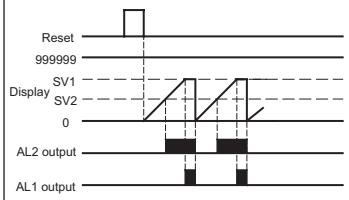
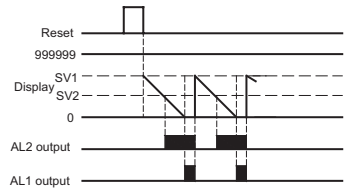
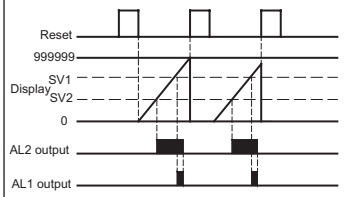
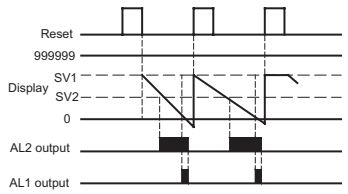
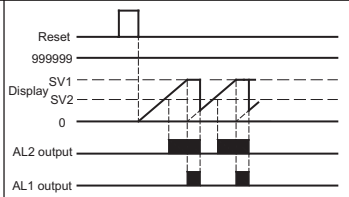
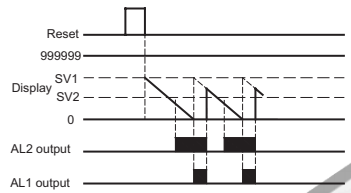
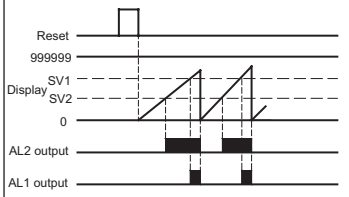
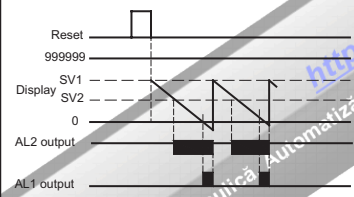
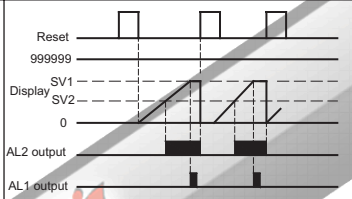
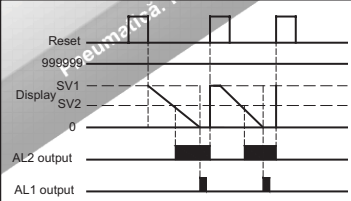
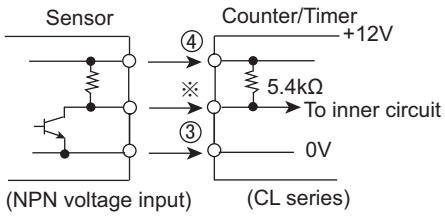
Output mode	C			Display value return to initial status automatically. Output delays to setting time, and then it returns to initial status automatically. (Output action is repeated single output.)
	R			Display value and output delay to setting time and then it returns to initial status automatically. (Output action is repeated single output.)
	K			Display value doesn't continue to increase/decrease until output reset; Output delays to setting time and then returns to initial status. (Output action is single output)
	P			Display value maintains single output delay time, and then it displays next cycle value. In delayed time, display value starts next cycle counting from initial value (Output action is repeated single output)
	Q			Display value continues to increase/decrease in single output/delay time, after single output/ delayed time, it returns to initial status. Output delays to setting time and then returns to initial status. (Output action is repeated single output.)
	A			Minimum setting value and AL2 output continus to manual reset input,AL1 output delays to setting time and then returns to initial status. (Output action is single output.)

7. Input connecting

1、Input logic:no voltage input(NPN)

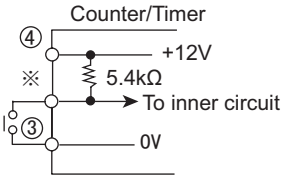
(1) Solid state input

●Standard sensor: NPN output type sensor



(NPN voltage input) (CL series)

(2)Connecting point input



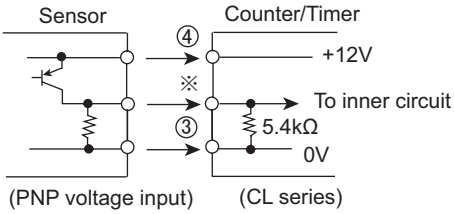
(CL series)

Counting speed:1 or 10cps setting(counter)

2、Input logic:Voltage input(PNP)

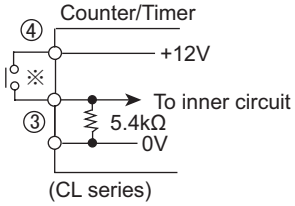
(1) Solid state input

●Standard sensor: PNP output type sensor



(PNP voltage input) (CL series)

?Connecting point input



(CL series)

Counting speed:1 or 10cps setting(counter)

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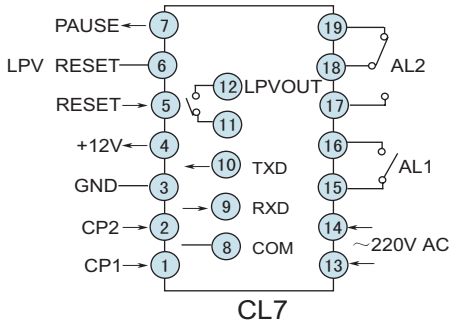
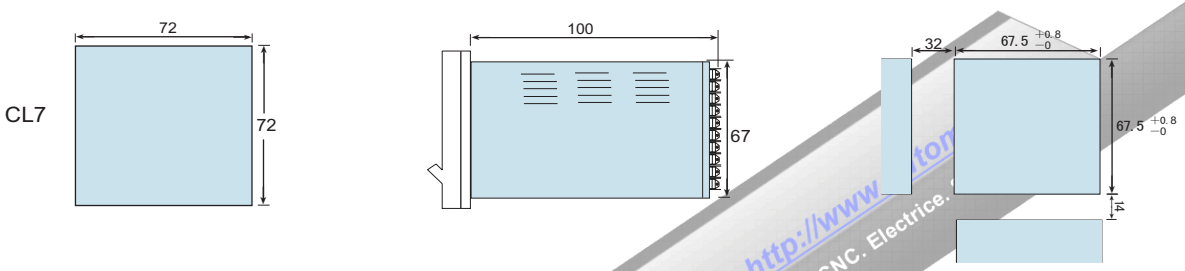
8. Connecting drawing



CL7

Note:please subject to the diagram on the product if any changes.

9. Mounting dimension



10. Notes

1、In measuring status, external short connect RST connecting drawing port or manually press RST key will activate timing value, counting value and output reset.
2、When counter input mode is d mode, it can match with rotary encoder, and rotary encoder doesn't connec with resistance. (only for NPN)
3、After changing meter's working mode, press "RST"to reset the meter, and then it can measure and control reliably.
4、If meter displays "Error"or "Erro", check parameter "SV1""SV2"accord with logic relation or not. (Logic relation refers to sheet 2)
5、If it has no standard frequency signal, please don't use frequency cabibration menu.
6、Input signal: the distance is short as possible from sensor to timer; you should use shielded line to prolong signal line and seperate it from power line.
7、Counter input connecting:when in high mode(1K、5K、10K), if you use connecting point input mode may appear phenomenon of counting too much. So connecting point input mode should set low input (1/30cps).
8、Don't use it in such occasion as below:the place of shaking and impacting seriously; the place of strong acid and alkaline; the place of direct sun's rays; the place of strong magnetic field and electrical interference.
9、Mounting environment: it should be indoor mounting; the altitude is less than 2000M; the pollution grade is 2.

※ If you don't follow it as above, it will bring you some malfunction of products.

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TCN SERIES DIGITAL COUNTER

48H×48W×100L

72H×72W×100L

FEATURES

- ⊙Double 4 digits LED,6 digits LED
- ⊙Set parameter with button
- ⊙easy to operate
- ⊙Single counter, single relay
- ⊙Auto reset, manaual reset, key lock, power fail memory
- ⊙Enhanced aniti-interference

CODE ILLUSTRATION

TCN□-□□□C

- Button
- 1:One segment
- 4:4 digits LED 6:6 digits LED
- P:Preset
- Dimension(mm): Black:72H×72W×100L 4:48H×48W×100L
- TCN series digital counter

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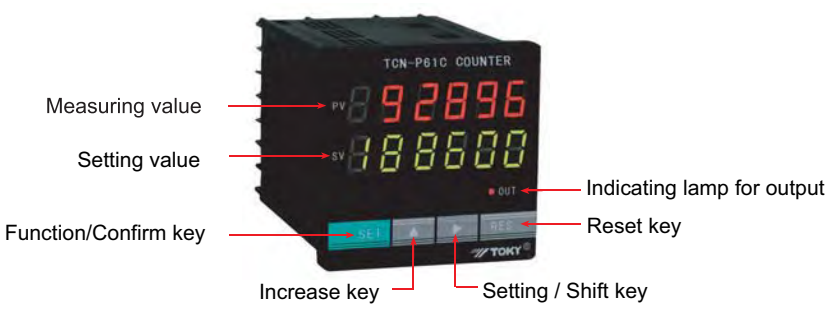
ORDERING CODE

Code	LED	Segment	Power	Dimension(mm)
TCN4-P41C	4 digits	one	220VAC	48H×48W×100L
TCN-P41C	4 digits	one	220VAC	72H×72W×100L
TCN-P61C	6 digits	one	220VAC	72H×72W×100L

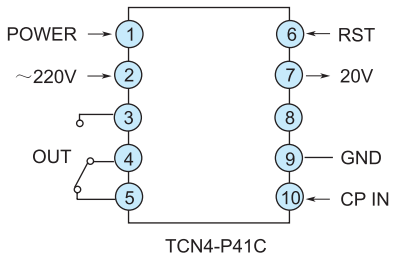
TECHNICAL SPECIFICATION

Power	220VAC±10% 50Hz/60Hz
Consumption	≤4W
Capacity of relay	250VAC/3A
Auxiliary power	DC15V±5V(≤25mA)
Insulation impedance	≥20MΩ
Dielectric strength	1.5KV/1M
Frequency	≤300Hz
Range	1～999999（6digits） 1～9999（4digits）
Delay time	0.01～99.99S

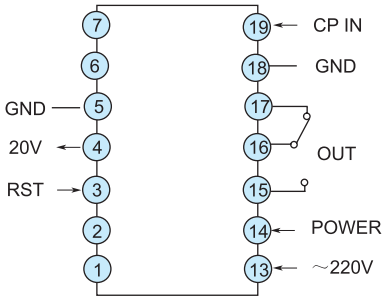
PANEL ILLUSTRATION



CONNECTION DIAGRAMS



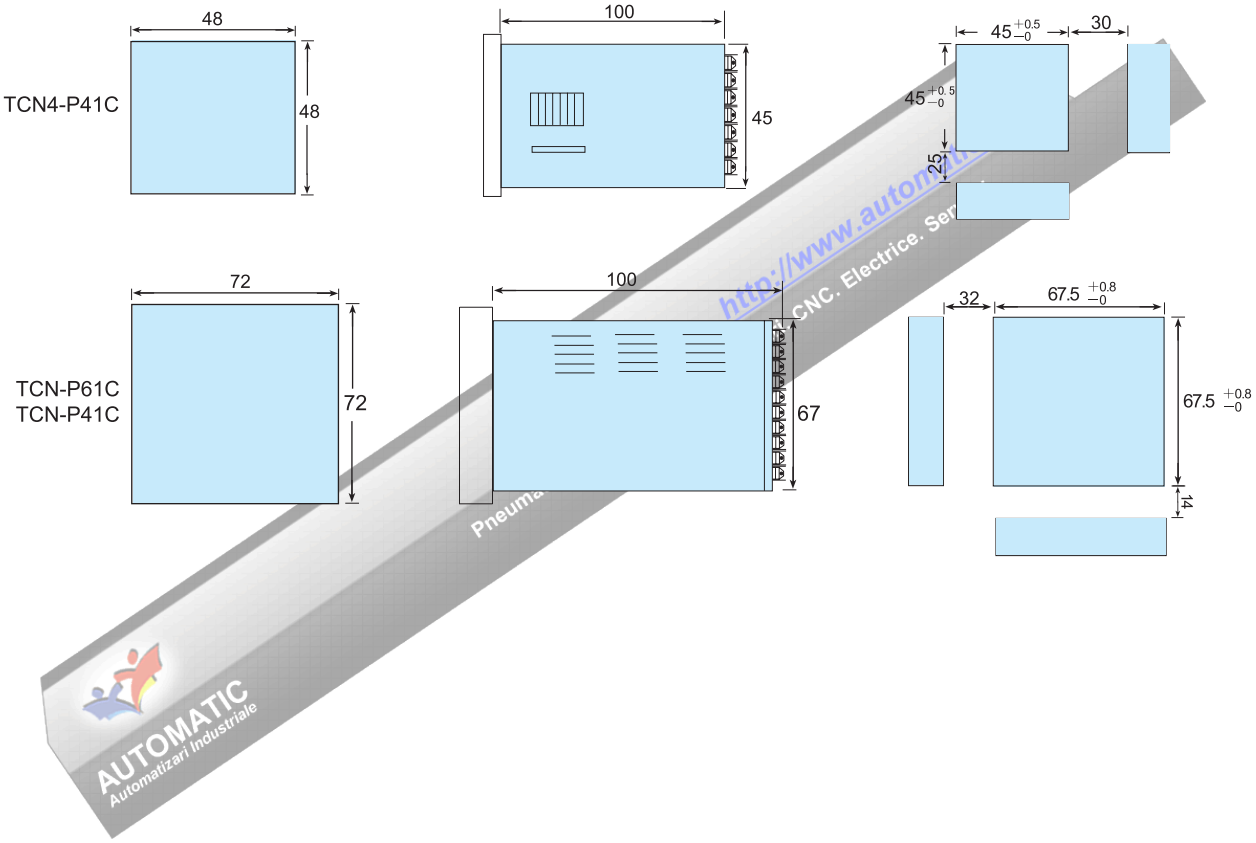
TCN4-P41C



TCN-P41C/P61C

Note: please refer to the diagram sticking on the enclosure if any changes.

DIMENSION



TCN SERIES DIGITAL COUNTER

72H×72W×100L

FEATURES

- ⊙Preset with thumb switch
- ⊙Precision,ehchanced Anti-interference
- ⊙Power fail memory
- ⊙4 digits,6 digits LED
- ⊙F, R , N, C output mode

CODE ILLUSTRATION

TCN - □□□□

- A:Excellent thumb switch B:Common thumb switch
- 1:1 segment preset
- 4: 4digits LED 6: 6gigits LED
- P:Preset
- TCN series digital counter

ORDERING CODE

Code	Size(mm)	LED	MAX freqency	Delay time(s)	Thumb Switch	Output Code
TCN-P41A	72H×72W×100L	4	1000CPS	0～15	excellent	F、N、R、C
TCN-P61A	72H×72W×100L	6	1000CPS	0～15	excellent	
TCN-P41B	72H×72W×100L	4	1000CPS	0～15	common	
TCN-P61B	72H×72W×100L	6	1000CPS	0～15	common	

TECHNICAL SPECIFICATION

Power	AC 220V(DC 24V be ordered)
Consumption	＜5W
Capacity of relay	250VAC/3A or 30VDC/5A
Auxiliary power	DC12V±1V 50mA
Insulation impedance	≥100MΩ
Dielectric Strength	1.5KV/1M
Anti-interference	Power±2000V In out±500V
Data Reserve	10 years
Temperature	0～50℃ 30～85%RH
Input mode	Square、Sine pulse altitude 5-30V
Input Impedance	≥10KΩ
Max Freqency	1000CPS
Delay time	0～15S

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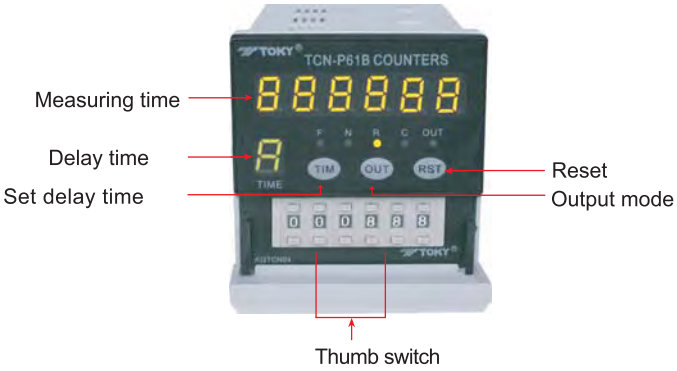
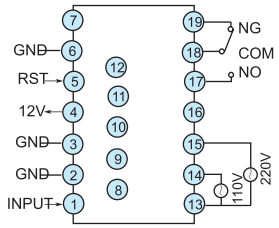
CODE ILLUSTRATION

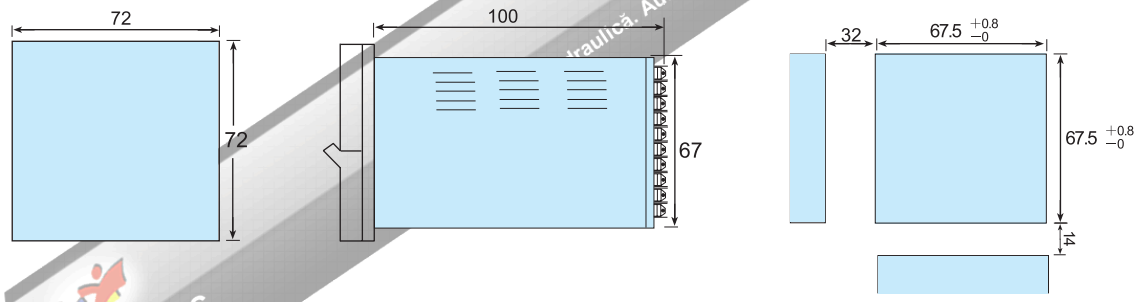


CONNECTION DIAGRAMS



NOTE:subjected to change without motice

DIMENSION



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CX SERIES TIMER/COUNTER/LENGTH METER

24H×48W×58L

36H×72W×58L

48H×96W×58L

FEATURES

- ⊙ Easy operation
- ⊙ 4 digits(CX2), 6 digits(CX3, CX8) LED
- ⊙ Anti-counter, Square ware or Sine wave input; 1 segment preset, R, N, C, F output, transistor with open collector(CX2, CX3, CX8), Relay output (CX3, CX8)
- ⊙ Countering rate setting range 0.01~99.99, 3 digits decimal point reserved
- ⊙ Power fail memory,data reserve 10 years
- ⊙ Key-press and out connection key reset function,time pause function
- ⊙ Four timing range optional:S; M,S; H,M,S; H,M
- ⊙ Timer with double delay function, Counter with increase / decrease function
- ⊙ High anti-interference

PANEL ILLUSTRATION

CX□□-□□□□A

- Code
- 1: 1 segment preset
- 4:4 digits 6:6 digits
- S:Rate setting
- P:Preset
- Blank: Power AC 90~256V C: Power DV 5V or DC10~30V
- Size:2:24H×48W×58L 3:36H×72W×58L 8:48H×96W×58L
- CX series digital counter

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ORDER CODE

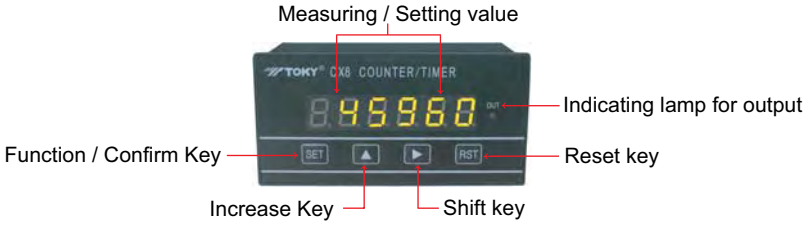
Code	Power	LED	Output	Auxiliary	Range(T)	Range(C)	Output
CX2C-PS41A	DC 5V or DC 10~30V	4	transistor	NO	0.01S～9999H	-1999～9999	F, N R,C
CX3C-PS61A	DC 5V or DC 10~30V	6	transistor	NO	0.01S～9999H.59M	-1999～9999	
CX3-PS61A	AC 90~256V	6	relay	NO	0.01S～9999H.59M	-199999～999999	
CX8C-PS61A	DC 5V or DC 10~30V	6	transistor	NO	0.01S～9999H.59M	-199999～999999	
CX8-PS61A	AC 90~256V	6	relay	12V	0.01S～9999H.59M	-199999～999999	
NOTE	DC 5V or AC/DC 10~30V be optional						

TECHNICAL SPECIFICATION

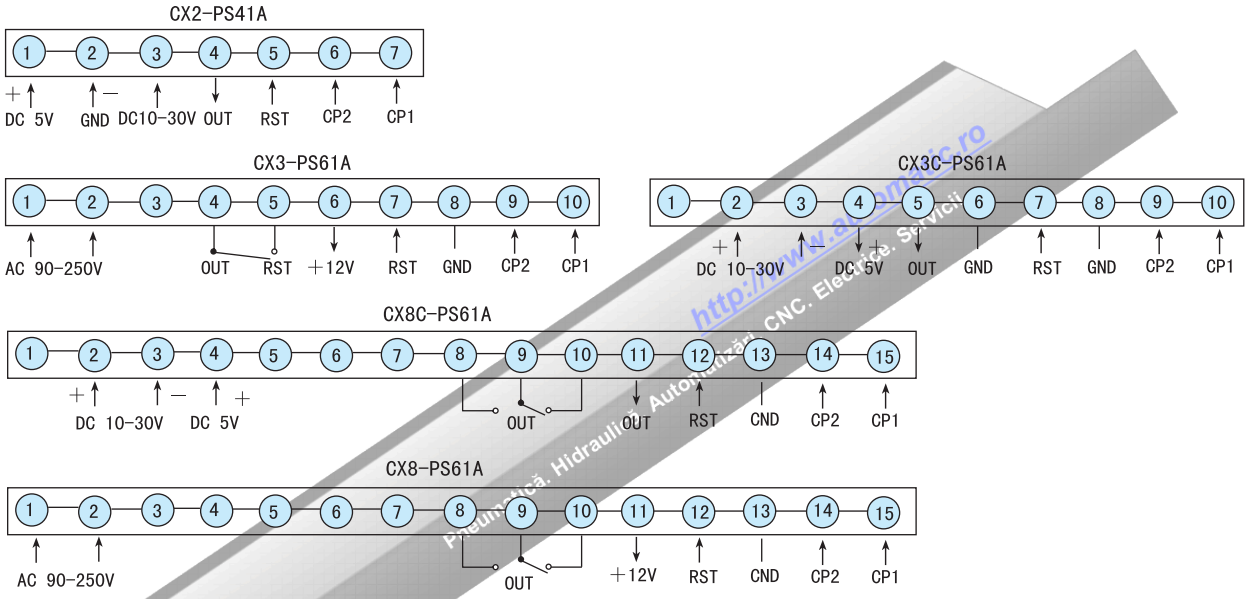
Power	85~256VAC, 5VDC, 10~30VDC
Consumption	＜5W
Input singal	altitude:5～30V
Trigger	rising /failing edge be optional
Input frequency MAX	10cps/100cps/1000cps/3000cps
Data reserve	10 years
Ambient temperature	0℃～50℃
Anti-interference	Power supply:2000VP-P I/0 ports:100VP-P
Range	-1999～9999(4 digit) -199999～999999(6 digit)
Delay time	0.01～99.99S
Input impendance	≥10KΩ
Capacity of Relay	AC 250V 3A (resistance load)
Capacity of Transistor	24VDC/30mA (OC)

Insulation impedance	≥ 10K Ω
Dielectric strength	AC 1.5KV 1min
Accuracy	0.1%FS
Range	0.01S～99H59M(4 digits) 0.01S～9999H59M(6 digits)
Dimension	24H×48W×58L 36H×72W×58L 48H×96W×58L

PANEL ILLUSTRATION

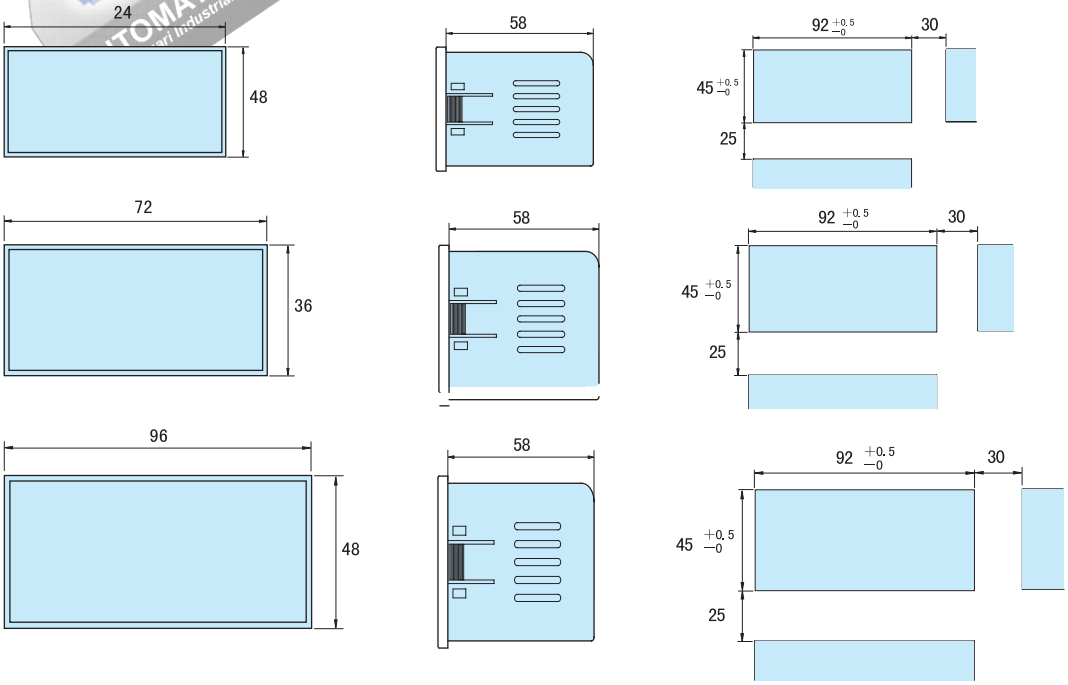


CONNECTION DIAGRAMS



Note: please refer to the diagram sticking on the enclosure if any changes.

DIMENSION



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